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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,908	01/26/2004	Fang Lei	02581- P0553A	3365

24126 7590 01/24/2007

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EXAMINER	
NGUYEN, THONG Q	
ART UNIT	PAPER NUMBER
2872	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/764,908	LEI, FANG	
	Examiner	Art Unit	
	Thong Q. Nguyen	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-22* is/are pending in the application.

4a) Of the above claim(s) *2,4,15 and 18-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 5-9, 11-14, 16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail.Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remark

1. The present Office action is made in response to the communication filed by applicant on 10/26/06. It is noted that in the communication, applicant has provided his arguments related to the rejections of the pending claims 1, 3, 5-9, 11-14 and 16-17 set forth in the previous Office action of 7/24/06. Note that claims 2, 4, 15 and 18-22 are non-elected claims and thus have not been examined, and claim 10 was canceled in the amendment of 7/18/05.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3, 8-9, 11-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (Japanese reference No. 61-20015) in view of Takahashi et al (U.S. Patent No. 5,743,846) (both of record).

Claims 1, 3, 8-9, 11-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Takahashi et al for the same reasons as set forth in the previous Office action and now repeated as below.

Takahashi in his Japanese reference No. 61-20015, hereafter, Takahashi '015, discloses an image transmission system having a plurality of image transmission units. See page 91, columns 1-2 and fig. 1. Each image transmission unit comprises a center rod lens and two outer rod lens elements wherein the center rod lens element is a combination of a center lens elements and two outer lens elements cemented to the

center lens elements on the opposite sides of the center lens element. See pages 92-95 and figs. 3-8.

In the embodiment of the image transmission unit as described in page 93, columns 7-8 and shown in figure 4, the image transmission unit comprises a center rod lens element (7) and two outer rod lens elements (5, 6) disposed on opposite sides of the center rod lens element (7) and in a symmetrical manner to one another with respect to the center lens element. The center rod lens element is a combination of a rod main biconcave lens element and two biconvex lens elements cemented to the main rod biconcave element to form a biconvex center rod lens element, and in combination form a cylinder. It is noted that the center rod biconcave lens element is symmetrical with respect to its center plane perpendicular to the optical axis of the image transmission unit and the lens surfaces of the main rod biconcave lens element and the two cemented biconvex lens elements are also symmetrical with respect to the center plane perpendicular to the optical axis of the image transmission unit and the center rod biconcave lens element. Each of the outer rod lens elements (5,6) is a biconvex rod lens element and is made as one piece. The center biconvex lens element (7) and the two biconvex outer rod lens elements (5, 6) are arranged in a vertex-to-vertex adjacent configuration to one another without any distancing tubes located between the rod lens elements. Regarding to the material of the lens elements, Takahashi '015 discloses that the material of the lens elements is homogenous material.

Regarding to the shape of the lens surfaces of the lens elements, the optical data as provided in columns 7-8 disclose that the shape of each lens surfaces of the lens elements is spherical shape with the following values:

The outer biconvex rod lens element (5) has its entrance lens surface of value 10.578 and its exit lens surface of value 35.259;

The outer biconvex rod lens element (6) has its entrance lens surface of value 35.259 and its exit lens surface of value 10.578; and

The center biconvex rod lens element (7) has three lens elements wherein the first biconvex lens element facing the outer rod lens element (5) has its entrance lens surface of value 9.441 and its exit lens surface of value 4.612; the biconcave element cemented to the exit lens surface of the first biconvex lens element has its entrance lens surface of value 4.612 and its exit lens surface of value 4.612; and the second biconvex lens element cemented to the exit lens surface of the biconcave lens element has its entrance lens surface of value 4.612 and its exit lens surface of value 9.441.

As a result of such a structure, the image transmission unit having two outer rod lens elements (5,6) and a center rod lens element (7) provided by Takahashi '015 meets all of the features recited in the claims 1, 3, 8-9, 11-14, 16 and 17, except that he does not disclose that the length of the center rod lens element is essentially same or longer than the length of each of the outer rod lens elements (5,6) as claimed in present claim 1.

However, the use of an image transmission system having a plurality of image transmission units each comprises a center rod lens and two outer rod lens elements

wherein the length of the center rod lens element is essentially same as that of the outer rod lens element is disclosed in the art as can be seen in the endoscope provided by Takahashi et al in their U.S. Patent No. 5,743,846, hereafter, Takahashi et al '846.

In particular, Takahashi et al disclose an endoscope having an image transmission system. The image transmission system comprises a plurality of image transmission units in which each unit comprises a center rod lens element and two outer rod lens elements disposed on the opposite sides of the center rod lens element and in a symmetrical to one another with respect to the center lens element. Regarding to the dimensions of the rod lens elements, Takahashi et al '846 disclose that the length of the center rod lens element can be shorter than or essentially same as the length of the outer rod lens element.

As shown in each embodiments described in columns 44-48, Tables 1-5, and shown in figures 6, 8, 11, 12, and 13, the length of the center rod lens element is shorter than the length of each of the outer rod lens elements disposed on opposite sides of the center rod lens element. For instance, in Table 1, the length of the center rod lens is about 12.0 while the length of each outer rod lens element is about 45.743. In Table 4, the length of the center rod lens is about 12.0 while the length of each outer rod lens element is about 44.40.

However, the length of the center lens element is essentially the same as the length of the outer rod lens elements is disclosed by Takahashi et al '846 as shown in each embodiments described in columns 48-52, Tables 6-7 and 9, and shown in figures 20-21 and 24. For instance, in Table 6, columns 48-49, the

length of the center rod lens is about 29.469 while the length of each outer rod lens element is about 29.648. In Table 7, columns 49-50, the length of the center rod lens is about 31.679 while the length of each outer rod lens element is about 31.497. In Table 9, columns 51-52, the length of the center rod lens is about 29.683 while the length of each outer rod lens element is about 29.166.

As a result of teachings provided by Takahashi et al '846, i.e., the length of the center rod lens element can be shorter than or essentially same as the length of the outer rod lens element, it would have been obvious to one skilled in the art at the time the invention was made to modify the image transmission unit having a center rod lens element and two outer rod lens elements disposed on opposite sides of the center rod lens element as provided by Takahashi '015 by using a center rod lens element having its length essentially the same as the length of the outer rod lens element as suggested by Takahashi et al '846 for the purpose of enlargement the numerical aperture to allow a greater number of light rays pass through the image transmission unit and thus increase the brightness.

4. Claims 1, 5-9, 11-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (Japanese reference No. 61-20015) in view of Takahashi et al (U.S. Patent No. 5,743,846) (both of record).

Claims 1, 5-9, 11-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Takahashi et al for the same reasons as set forth in the previous Office action and now repeated as below.

Takahashi in his Japanese reference No. 61-20015, hereafter, Takahashi '015, discloses an image transmission system having a plurality of image transmission units. See page 91, columns 1-2 and fig. 1. Each image transmission unit comprises a center rod lens and two outer rod lens elements wherein the center rod lens element is a combination of a center lens elements and two outer lens elements cemented to the center lens elements on the opposite sides of the center lens element. See pages 92-95 and figs. 3-8.

In the embodiment of the image transmission unit as described in page 93, column 9 and shown in figure 5, the image transmission unit comprises a center rod lens element (7) and two outer rod lens elements (5, 6) disposed on opposite sides of the center rod lens element (7) and in a symmetrical manner to one another with respect to the center lens element. The center rod lens element is a combination of a rod main biconvex lens element and two meniscus negative lens elements cemented to the main rod biconcave element to form a biconvex center rod lens element, and in combination form a cylinder. It is noted that the center rod biconvex lens element is symmetrical with respect to its center plane perpendicular to the optical axis of the image transmission unit and the lens surfaces of the main rod biconcave lens element and the two cemented meniscus lens elements are also symmetrical with respect to the center plane perpendicular to the optical axis of the image transmission unit and the center rod biconvex lens element. Each of the outer rod lens elements (5,6) is a biconvex rod lens element and is made as one piece. The center biconvex lens element (7) and the two biconvex outer rod lens elements (5, 6) are arranged in a vertex-to-

vertex adjacent configuration to one another without any distancing tubes located between the rod lens elements. Regarding to the material of the lens elements, Takahashi '015 discloses that the material of the lens elements is homogenous material.

Regarding to the shape of the lens surfaces of the lens elements, the optical data as provided in column 9 disclose that the shape of each lens surfaces of the lens elements is spherical shape with the following values:

The outer biconvex rod lens element (5) has its entrance lens surface of value 13.715 and its exit lens surface of value 13.715;

The outer biconvex rod lens element (6) has its entrance lens surface of value 13.715 and its exit lens surface of value 13.715; and

The center biconvex rod lens element (7) has three lens elements wherein the first meniscus negative lens element facing the outer rod lens element (5) has its entrance lens surface of value 12.338 and its exit lens surface of value 7.471; the biconvex element cemented to the exit lens surface of the first meniscus lens element has its entrance lens surface of value 7.471 and its exit lens surface of value 7.471; and the second meniscus negative lens element cemented to the exit lens surface of the biconvex lens element has its entrance lens surface of value 7.471 and its exit lens surface of value 12.338.

As a result of such a structure, the image transmission unit having two outer rod lens elements (5,6) and a center rod lens element (7) provided by Takahashi '015 meets all of the features recited in the claims 1, 5-9, 11-14, 16 and 17, except that he

does not disclose that the length of the center rod lens element is essentially same or longer than the length of each of the outer rod lens elements (5,6) as claimed in present claim 1, and the meniscus lens element cemented to the biconvex lens element of the center rod lens has a positive power as claimed in present claim 6.

Regarding to the power of the meniscus lens elements cemented to the biconvex lens element of the center rod lens element as recited in present claim 6, such a feature is not critical to the invention as stated in the specification and in the present claims. The support for this conclusion is found in the specification in which applicant has disclosed that the meniscus lens element has a negative power. It is also noted that the negative power of the meniscus lens is indeed claimed as can be seen in the present claim 7. Thus, absent any showing of criticality, it would have been obvious to one skilled at the time the invention was made to use any meniscus lens element of negative or positive power with the biconvex lens for the purpose of adjusting the power of the whole lens element.

Regarding to the feature related to the comparison between the lengths of the center rod lens element and the outer rod lens element, it is noted that the use of an image transmission system having a plurality of image transmission units each comprises a center rod lens and two outer rod lens elements wherein the length of the center rod lens element is essentially same as that of the outer rod lens element is disclosed in the art as can be seen in the endoscope provided by Takahashi et al in their U.S. Patent No. 5,743,846, hereafter, Takahashi et al '846.

In particular, Takahashi et al disclose an endoscope having an image transmission system. The image transmission system comprises a plurality of image transmission units in which each unit comprises a center rod lens element and two outer rod lens elements disposed on the opposite sides of the center rod lens element and in a symmetrical to one another with respect to the center lens element. Regarding to the dimensions of the rod lens elements, Takahashi et al '846 disclose that the length of the center rod lens element can be shorter than or essentially same as the length of the outer rod lens element.

As shown in each embodiments described in columns 44-48, Tables 1-5, and shown in figures 6, 8, 11, 12, and 13, the length of the center rod lens element is shorter than the length of each of the outer rod lens elements disposed on opposite sides of the center rod lens element. For instance, in Table 1, the length of the center rod lens is about 12.0 while the length of each outer rod lens element is about 45.743. In Table 4, the length of the center rod lens is about 12.0 while the length of each outer rod lens element is about 44.40.

However, the length of the center lens element is essentially the same as the length of the outer rod lens elements is disclosed by Takahashi et al '846 as shown in each embodiments described in columns 48-52, Tables 6-7 and 9, and shown in figures 20-21 and 24. For instance, in Table 6, columns 48-49, the length of the center rod lens is about 29.469 while the length of each outer rod lens element is about 29.648. In Table 7, columns 49-50, the length of the center rod lens is about 31.679 while the length of each outer rod lens element is about

31.497. In Table 9, columns 51-52, the length of the center rod lens is about 29.683 while the length of each outer rod lens element is about 29.166.

As a result of teachings provided by Takahashi et al '846, i.e., the length of the center rod lens element can be shorter than or essentially same as the length of the outer rod lens element, it would have been obvious to one skilled in the art at the time the invention was made to modify the image transmission unit having a center rod lens element and two outer rod lens elements disposed on opposite sides of the center rod lens element as provided by Takahashi '015 by using a center rod lens element having its length essentially the same as the length of the outer rod lens element as suggested by Takahashi et al '846 for the purpose of enlargement the numerical aperture to allow a greater number of light rays pass through the image transmission unit and thus increase the brightness.

Response to Arguments

5. Applicant's arguments filed on 10/26/2006, pages 2-7, with respect to the rejections of claims 1, 3, 5-9, 11-14, 16 and 17 have been fully considered but they are not persuasive for the following reasons.

a) Regarding to the applicant's arguments that the arrangement of lens elements as provided by Takahashi in his Japanese reference No. 61-20015, hereafter, Takahashi '015 does not disclose that the lens elements are arranged to a vertex-to-vertex manner as claimed. The examiner respectfully disagrees with the applicant's opinion for the following reasons. First, it is noted that the claim has not provided any limitations/features to clarify the so-called "vertex-to-vertex" arrangement of the lens

elements. Second, a vertex-to-vertex arrangement of the lens elements does not mean that the vertex of the lens elements is in contact with each other. Third, the lens arrangement of the lens elements as provided by Takahashi '015 as provided in page 93, columns 7-8 and shown in fig. 4 is a vertex-to-vertex arrangement because the vertex of the outer lens element (5) on its image side faces to the vertex of the central lens (7) on its entrance side and the vertex of the central lens (7) on its image side faces the vertex of the outer lens (6) on its entrance side. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

b) In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both references used in the rejections of the claims are directed to optical device having a plurality of image transmission units wherein each image transmission unit comprises a center rod lens and two outer rod lens elements wherein the center rod lens element is a combination of a center lens elements and two outer lens elements cemented to the center lens elements on the opposite sides of the center lens element. As such, both

references used in the rejections of the claims are clearly from a common field of endeavour. The primary reference, the Japanese reference No. 61-20015 issued to Takahashi, hereafter, Takahashi '015, discloses an image transmission system having a plurality of image transmission units wherein each image transmission unit comprises a center rod lens and two outer rod lens elements wherein the center rod lens element is a combination of a center lens elements and two outer lens elements cemented to the center lens elements on the opposite sides of the center lens element. See pages 92-95 and figs. 3-8. The endoscope provided by Takahashi et al in their U.S. Patent No. 5,743,846, hereafter, Takahashi et al '846, which is used as a secondary reference discloses/suggests to one skilled in the art a fact that the length of the center rod lens element can be shorter than or essentially same as the length of the outer rod lens element. To support for that suggestion, Takahashi et al '846 indeed disclose a numerous examples in which some examples show that the length of the center lens is shorter than the length of the outer lens and some examples show that the length of the center lens is shorter than the length of the outer lens. As a result, one skilled in the art will modify the lens system having plural image transmission units provided by Takahashi '015 by making the length of the center lens the same as that of the outer lens as suggested by Takahashi et al '846 to meet a particular design or a particular application.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone A. Allen, can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Q Nguyen
Primary Examiner
Art Unit 2872

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